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Tax Aid: For Academic R&D, Big One Got Away

Lobbyists for the major research universities were heavily engaged in Capitol Hill's recently concluded tax battle—and they won a few goodies for their clients. But now that the legislative dust has settled, it turns out that the big one got away, as far as academe is concerned.

Universities can expect a small increase in research funds as a result of the credit that private companies will be able to take for incremental expenditures on research and development. And they'll benefit, too, from less stringent rules governing deductions for research equipment that private firms donate for use on campus.

But the universities failed to put across what would have been their most bountiful tax change—a 25-percent credit for all funds donated by private corporations for the support of basic research.

The tax-credit proposal was contained in the Democratic-backed bill which was approved by the House Ways and Means Committee and sent to the floor last month. The Administration, however, apparently decided that it had already made a sufficient concession to universities by allowing basic research to be covered in making calculations of increased R&D spending. The winning Republican bill therefore provided no special relief for universities, though some university officials believe that, without this provision, the tax legislation could even act as a disincentive to companies to increase their donations to universities; the reason is that the same tax advantage can be obtained by increasing in-house industrial research expenditure.

Total US R&D Spending Heads For Record $79 Billion—Page 4

The tax-break proposal was first put forward in a bill introduced last year by Rep. Charles Vanik (D-Ohio). It was widely supported by universities, keen to find additional sources of funds to make up for the squeeze on federal research support. And it was reintroduced shortly after the beginning of the current session by Rep. James M. Shannon (D-Mass.) and by Senator Bill Bradly (D-NJ), who called it the "Research Revitalization Act."

University leaders called to testify on the bill were enthusiastic about its expected benefits. Addressing the Senate Finance Committee in May on behalf of the Association of American Universities (AAU) and the National Association of State Universities and Land Grant Colleges, Donald Kennedy, President of Stanford University, said that "as our national attention is fixed on the extraordinary difficulty of paring back government expenditures, one frequently hears it asserted that the private sector can be expected to accomplish those things from which the government now proposes to withdraw."

But, he added somberly, "the plain fact is that significant change in private sector support, especially for research, will require new incentives...I simply do not believe that significant sources of funds exist in the private sector that we are not now tapping."

Similar remarks came from Paul Gray, President of Massachusetts Institute of Technology, who, like Kennedy, pointed out that industry currently supports only 3.5 per cent of university R&D—an estimated $210 million in 1980—and that after a period of steady increase this figure has been declining since 1978. The proposed legislation, he told the House Ways and Means Committee, would "result in a greatly increased flow of

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In Brief

The word from the Department of Health and Human Services is that a replacement for recently resigned NIH Director Donald Fredrickson will be announced before the end of this month. Most often mentioned are Richard M. Krause, Director of the National Institute of Allergy and Infectious Diseases, and William H. Foege, Director of the Centers for Disease Control.

Another sign of the sunken influence of the National Academy of Sciences and its wholly owned subsidiary, the National Academy of Engineering: When eight high-tech conglomerates decided recently to put up $200,000 for a study of the engineer shortage, they signed up the fledgling American Association of Engineering Societies, a coalition of 38 engineering organizations, to do the job.

Senator Orrin G. Hatch (R-Utah) and his committee colleague Pamela Hawkins (R-Fla.) are fretting about press indifference to their raking over long-stale miniscandals at the National Cancer Institute. On the basis of promised revelations they got some pre-hearing attention, but it was downhill from then on when they simply worked over a lot of old stuff. Meanwhile, two *Washington Post* reporters are about halfway through a year-long investigation of the National Cancer Program.

...Industry Wage Credits May Hurt Academe

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corporate funds for the support of university research, an increase which is urgently needed."

MIT, he said, with its special tilt toward technology and a history of industrial relationships, did a great deal more research with industry than most universities. "But even MIT has only scratched the surface."

Yet the Reagan Administration remained unconvinced. It's "clean" tax bill, introduced in March, made only a passing reference to research expenditures when it proposed to let taxpayers recover the costs on equipment used for research over three, rather than five years. This provision survived into the version of the bill which has now been passed into law. Research administrators doubt whether it will have much impact, however, since companies can claim a 10-per-cent investment credit for equipment whose costs are recovered over five years, but only 6 per cent for that subject to three-year cost recovery.

University lobbyists sought to go one better. Their proposal was to include in what had now become an omnibus tax bill the basic thrust of the legislation introduced by Senator Bradley and Rep. Shannon. The device that they used was to recommend that, in calculating the incremental research costs for which companies could claim a 25-per-cent credit, money spent on university research should be omitted in calculating the expenditure for the previous three years. The effect of this would be to allow the full 25-per-cent credit on the university-directed funds, in contrast to the credit only on incremental expenditures given for in-house expenditure.

The universities managed to persuade the House Ways and Means Committee to adopt this approach in their rewriting of the Administration's proposed tax bill. A full tax credit for university research was included in the bill which the committee reported out at the beginning of July. It was applauded by groups such as the American Council on Education, whose Business-Higher Education Forum, a group of 60 corporate chief executive officers and college and university presidents and chancellors, sent a message of congratulations to the Chairman of the Committee, Dan Rostenkowski (D-Ill.) "Legislation of this kind can provide a significant impetus for the conduct of business research and will be to the benefit of corporations, universities and society-at-large," the Forum members wrote.

The Treasury Department, however, was not convinced. Treasury officials had originally estimated that the tax credit on incremental expenditures on wages and salaries alone would cost $41 million in the current fiscal year, $329 million in 1982, $602 million in fiscal 1984 and $724 million in 1986. The costs went higher once laboratory supplies and computer time were included, leading the Treasury to propose a cap on the total credit that can be claimed. The Department felt it had already made a significant concession in allowing basic research to be eligible for the credit, despite the argument that the payments are charitable contributions and not research business expenses.

In these circumstances, the Treasury decided to draw the line. Secretary Donald Regan politely but firmly told a delegation organized by the AAU, and made up of Presidents Kennedy of Stanford, Gray of MIT, and Derek Bok of Harvard, that he could not meet their request.

The result was that special treatment for universities was omitted from the tax bill that was eventually approved by the House, and thus from the legislation that was finally adopted.

Several other changes were made by the House. One was the exclusion from tax credit calculations of research performed outside the US, of research funded by another person or government agency, and—particularly galling to the academic community—of research in the social sciences and the humanities.

The tax bill does, however, increase the amount of charitable donations which a manufacaturer can claim on equipment donated to a university or other higher-education institution. Manufacturers will be allowed to deduct one-half of the cost of the equipment to them plus half of difference between the cost and the fair market value, provided that the equipment is donated

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A Shred of Carter Innovation Plan Survives

The Carter Administration's efforts to promote research collaboration between academe and industry have largely been wiped out by the Reaganite faith in the marketplace attending to whatever is useful in society.

But the National Science Foundation has been permitted to retain $1.7 million for the support of cooperative research centers, and has just announced the launching of another of them, the fifth so far—the Center for Applied Polymer Research, which is being set up at Case Western Reserve University, Cleveland. NSF is putting up $210,000 for the first year (with a total of $750,000 committed for five years); a matching first-year sum is coming from the combined contributions of four industrial firms: B.F. Goodrich, Dow Chemical, Celanese Research, and Hydron Laboratories.

The Center, to be directed by Anne Hiltner, Associate Professor in the Case Western Reserve Department of Macromolecular Science, is supposed to become self-supporting when the NSF support ends.

Meanwhile, the Reagan Administration's position on direct government stimulation of technological innovation was clearly spelled out last month in testimony by Joseph R. Wright Jr., Deputy Secretary of Commerce, before the House Subcommittee on Science, Research, and Technology.

Wright made it clear that, apart from the minor NSF enterprise in innovation, the Administration has no regard for the Carter design, which called for a variety of steps to stir up innovative activities.

Following is the crux of his testimony:

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"Technological innovation is...perhaps the most difficult determinant of productivity to understand. As the Congressional Budget Office noted in its January 1981 study on "The Productivity Problem: Alternatives for Action," there is currently no direct measure of innovation that is meaningful; there are only indirect measures such as R&D spending or the number of patents awarded. In addition, investment in and use of new technologies are often inhibited by such intangibles as the pressure on many managers and investors to concentrate on short-term earnings performance.

"What does seem clear, however, is that the factors that influence the private sector to invest in technological innovation are similar to those which influence other investment decisions. The most vital factor is the perception of risks and expected return from innovative effort relative to other opportunities...

"We are proposing to implement a comprehensive Presidential program to reverse the adverse trends in productivity and technology innovation by restoring an economic environment in which there can be real and substantial returns for working, saving and investing. This, of course, includes a policy of reduced Federal expenditures; a program of regulatory reform; a stable monetary policy that encourages long-term planning and investment; a tax policy that provides incentives for modernizing our industrial/manufacturing base, expands research and development and increases the incentives to save and invest. The President's program should encourage the marketplace to provide the funds for industry to undertake needed innovations.

"Although the President's Program reflects the principle that technological innovation and productivity improvement are responsibilities of the private sector and that this will occur if the economic climate is favorable, this does not mean that there is not a necessary and proper role for Federal agencies such as the Department of Commerce. We believe that this role has less to do with Federal selection of specific types of commercial technologies for development and more to do with making sure that we are collecting the right type of pertinent data and properly assessing, analyzing and communicating it to the private sector..."

TAX BILL

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less than two years after it has been built. Currently only the actual cost of production can be deducted.

University officials hope that this last provision will help to correct the current severe shortage of modern equipment in university laboratories—a situation exacerbated by the Reagan Administration's decision to cut from the National Science Foundation's budget a $75-million fund proposed by President Carter to upgrade research facilities. They also expect to benefit from the effects of a bill which will, in practice, mean that the federal government is agreeing to cover almost 70 per cent of any increase which a company decides to make in its R&D after 1986.

But there remain several concerns in universities. One is that, by directing the tax credits largely at wages and salaries, this will tempt companies to make considerable increases in the money they are prepared to offer their research staff—a move which could place universities at an even greater disadvantagae than they are at present.

There is also disappointment at the failure to persuade the Administration about the need for a special tax break. Newton Cattell of the AAU, one of the principal promoters of the Shannon-Bradley initiative, said last week that he felt the Association should have done more to get business leaders to present their views to the White House, rather than rely on members of the academic community.—DD

On Wings of Defense, R&D Funds Set a Record

Government and industry will hoist national spending on research and development to a record $79 billion next year—more than double the total for 1975. But the distribution patterns of that colossal sum spell out slim pickings for the non-profit research organizations that rely heavily on support from Washington.

That's the picture that emerges from the National Science Foundation's latest report on R&D finance, a four-page summary, NSF 81-314, available without charge from: NSF, Division of Science Resources Studies, Washington, D.C. 20550.

What the summary shows is that the grand totals have been growing rather healthily in "real" terms, averaging a 4-per-cent annual increase since 1975. And next year, the total—from all sources, for all purposes—will register a real increase of 6 to 8 per cent, depending on whose inflation estimate is used, NSF says.

The overall sums are indeed huge—exceeding the total R&D spending of Japan, West Germany, France, and Britain. But as NSF, the government's official scorekeeper for R&D, points out, while federal R&D spending will rise 15 per cent next year to a new high, $37.6 billion, "All of this growth probably will result from increased defense spending, which is expected to increase some 20 per cent in real terms between 1981 and 1982. All other federal agencies combined should record a drop of around 4 per cent between the two years."

While federal funds for defense R&D are increasing at a fast pace, the federal role in the nation's overall R&D effort is in a relative decline. "During the mid-sixties," NSF reports, "the federal government funded nearly two-thirds of the nation's R&D effort. By 1979, federal support had fallen to less than one-half as growth in industrial R&D support outpaced federal funding over the mid-sixties to mid-seventies period." Though federal spending has picked up a bit relative to industrial R&D, the federal share still remains at slightly less than half the national R&D total.

In the basic research category, total spending is expected to reach $9.8 billion next year, an annual increase of 11 per cent, which should more or less maintain the 1975 to 1980 rate of a yearly 4 per cent real increase. The difficulty, however, for basic research is that the federal government pays for about 70 per cent of the national total, and most of that money comes from the civilian agencies that are least favored in the 1982 budget.

The big increases in military spending include a boost for basic research in universities. But defense funding brings its own problems, among them tensions about foreign students participating in nuclear and advanced electronics research.

Research and Development Money: The Users and Providers

[Millions of dollars]

Year	Total	Federal Government	Industry[1]	Universities and colleges	Associated FFRDC's[2]	Other nonprofit institutions'
			By performer			
1975	$35,169	$ 5,310	$24,187	$3,409	$ 987	$1,276
1976	38,935	5,688	26,997	3,727	1,147	1,376
1977	42,923	6,053	29,928	4,063	1,384	1,495
1978	48,023	6,856	33,164	4,614	1,717	1,672
1979	54,215	7,497	37,606	5,183	1,935	1,994
1980 (prel.)	61,127	8,052	42,750	5,950	2,200	2,175
1981 (est.)	69,065	8,965	49,150	6,300	2,300	2,350
1982 (est.)	79,000	10,100	57,000	6,800	2,350	2,750
			By source			
1975	35,169	18,065	15,820	749	—	535
1976	38,935	18,833	17,694	808	—	600
1977	42,923	21,674	19,696	881	—	672
1978	48,023	23,893	22,336	1,028	—	766
1979	54,215	26,556	25,638	1,183	—	838
1980 (prel.)	61,127	39,302	29,475	1,385	—	965
1981 (est.)	69,065	32,665	33,865	1,485	—	1,050
1982 (est.)	79,000	37,600	38,600	1,550	—	1,250

[1]Includes expenditures for federally funded research and development centers (FFRDC's) administered by this sector. They account for less than 5 percent, respectively, of the industry and non-profit performance totals.

[2]FFRDC's administered by individual universities and colleges and by university consortia.

France: New Government Raises R&D Spending

Paris. World-beating budget boosts for R&D—a "real" 11 per cent annually over the next four years—have been announced by the new Socialist government in connection with plans to invigorate and expand the nation's scientific and technological enterprise.

Three new programs are being launched under the new research budget. These will be in biotechnology, microelectronics, and new sources of energy. Their model will be the previous large research programs in atomic energy, oceanautics and other fields, that France has from time to time carried out since World War II. This is not surprising, as the new science czar, 42-year old Jean-Pierre Chevenement, himself adolesced in the 1950s, when these programs symbolized the country's moral recovery from the Occupation, and Dassault test-pilots were as popular as Willie Mays in the US.

American science-policy officials will find that Chevenement is a complicated man to deal with. He has gone on record as strongly supporting a true "break with capitalism," he hung a portrait of Karl Marx in his office at the National Assembly, and he believes strongly in the power of high-blown phrases, especially when they come from his own mouth. But he also believes that America knows something about administering science that France does not, which means that emissaries from Washington who can play on this admiration are likely to find he is at least attentive. Chevenement is also the most left-wing high official in the government, and knows that any cooperation or favorable agreements with the Americans can only make him more respectable in the eyes of the more conservative, NATO-supportive members of the government.

The stated goal is to get France out of its laggard position in percentage of gross domestic product devoted to R&D. It's now about 1.8 per cent, compared to 2.5 for West Germany, 2.4 for the US, and a bit over 2 for the UK. To get up to the stated goal of 2.5 per cent by 1985, R&D spending will have to increase from the present $9.5 billion to about $14.4 billion. In a pre-election speech, President Mitterand said he wants France to occupy "one of the three top places in the world" in science. That's Western European code for coming in ahead of England and West Germany.

As the new government gives every indication of sticking to the promises outlined in its pre-election publications, the funding proposals are being taken here to be exact estimates of what will happen. The Socialist control of Parliament, along with extremely strong party loyalty, means that proposals will not be changed in the legislative mill. The creation of a high-level Ministry of Research and Technology for Chevenement, a role that had been split among several other ministries since 1969, is seen as further confirmation of the government's support for science.

Along with increased financial support will be a continuation of the tradition of strict control of all developments from Paris. Any quirks of Chevenement will get carried out with almost no changes from universities or local governments. (The central control is so strict that the areas of France which correspond to American states have never elected their own governors, but instead have one appointed from the national capital. Although the new government is also committed to changing that system, their way of doing so has been to create another powerful bureaucracy for it in Paris—somewhat unproductive to all but a Cartesian logicist.)

Much of the funding increase will be channelled through the nationalized industries. A look at the figures explains why. Of the $9.5 billion in the current science budget, the biggest chunk, $3.9 billion, goes to industrial research. (Fundamental and applied civilian research gets $2.4 billion, military research $1.9 billion, and large technological programs account for the remaining $1.3 billion.) Of this $3.9 billion in industry, $2.6 billion goes to industries either nationalized or in line to be nationalized. This is precisely where the new government wants to make its most noticeable successes, to show that Socialist control of a business need not mean a stifling of creativity or growth.

Such research within industry will be helped not just by direct grants, but also through a new program of loans and tax breaks for firms doing research that is especially innovative or especially pleasing to the government. There will be support for more conferences bringing together industrial researchers and scientists at the major state laboratories. And because several French banks spoke out strongly against Mitterrand and

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In Print

Information Technology in Education: Perspectives and Potential, a report prepared by the Congressional Research Service for the House Subcommittee on Science, Research, and Technology, available without charge from: Publications Office, Committee on Science and Technology, H2-155, House Annex No. 2, Washington, DC 20515. (Include a self-addressed label.)

A Guide to Obtaining Information from the United States Geological Survey, including satellite images, streamflow data, assorted technical reports, etc., available without charge from: USGS, Text Products Section, Eastern Distribution Branch, 604 South Pickett St., Alexandria, Va. 22304. (Specify USGS Circular 777.)

Britain: Universities Hit by Big Budget Cut

London. Britain's universities face an increasingly bleak financial future as the result of major cuts in government support and new fee policies that are expected to reduce enrollments of foreign students. Overall, it's expected that income will drop 11 to 15 per cent by 1985.

The largest loss will be in the sustaining support that the government provides academe through the University Grants Committee (UGC), a quasi-governmental body through which public funds are channeled to Britain's 44 full-fledged universities. Under recently announced plans, the UGC budget will be reduced by about 8.5 per cent over the next four years, from roughly the equivalent of $1.7 billion to $1.5 billion.

The UK government funds the universities via the Department of Education and Science (DES), which gives the money to the UGC to apportion to the universities. The UGC, made up mainly of academics with a few industrialists and school teachers thrown in, was set up in 1919 to act as a buffer against political influence in the universities. Since then it has maintained a low profile, implementing government policy in higher education without adding too many radical changes on its own account, although it has occasionally tried to centralize the teaching of certain subjects to hold down costs. Now it finds itself in the center of the controversy over the cuts.

In making the cuts, the UGC adopted a selective approach. It worked out a national strategy for the number of students it expected to see in each subject area, given the new financial constraints. For example, the number of undergraduates will decrease from 130,770 in the academic year 1979-80 to 119,770 in 1984-85. In the sciences the change is less drastic, from 106,880 to 104,570. The fall in student numbers, which is about 4 per cent overall, is far lower than the cut in money. As a result, universities will receive about 10 per cent less for each student. Nevertheless, the UGC expects more students to study expensive subjects, such as physical sciences, mathematical sciences, and engineering; fewer will take pharmacy and some aspects of biology.

The subject committees looked at the departments in each university and decided on the basis of their quality and nature how the cuts should apply in each case. The UGC collated the recommendations into notes for each university, which included advice on subjects to be cut back, preserved, or, in a few cases strengthened. The UGC also said how much money each institution would get in 1984-85 and the number of students in arts, science, and medicine that should be studying there.

Fairly light cuts—1 to 5 per cent—were predictably accorded Oxford and Cambridge, plus a few surprises in this favored group, Bath and York. Then there was a medium range, of 5 to 13 per cent, which included Manchester, Sussex and London. Finally, the real losers—13 to 28 per cent—which included new technological universities such as Salford, Aston, Bradford, and Stirling, a small, remote Scottish university. These have

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FRANCE

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his Socialist ideas before the election, no one will be surprised if those same banks (themselves facing nationalization) are forced to greatly increase their support for industrial research.

The ministries that used to control the different parts of what is now the Science Ministry are eager to get their parts of it back. Chevenement wants to keep them from doing so. To improve his clout in the government, and so ensure that the increased science funding stays under his direction, Chevenement is planning to collect scientists, union representatives and public figures together in a series of meetings this autumn, to determine such details of the science push as the hiring of scientists, international cooperation, etc. Already he plans to ask Parliament for at least 200 new long-term research positions, as well as for the recruitment of substantially more skilled engineers, technicians, and administrators.

As a help to legislative enthusiasm, there are plans to assemble for Parliament something like the technical staff of an American congressional committee, so that French legislators will have their own source of expertise on science questions. The specialists chosen for this are likely to be strong for Chevenement. In line with traditional Socialist concerns, the merits of increased science funding will also be pushed in schools, books, on television, and in museums. Chevenement can be expected to encourage other such information distribution schemes, for he first made his own reputation, when still in his twenties, by creating an "independent" socialist research center, and linking his own career to the merits of the reports produced.

These ploys are likely to work. Mitterrand has a history of delegating authority, especially in areas where he has no expertise. And Mitterrand's roots are firmly set in traditional French literature. No GE sponsorship or nuclear engineering courses in the c.v. of this head of state. Which means that Chevenement is the man to watch for French science.—David Bodanis

(The author is a free-lance science-policy journalist living in Paris.)

...Academic Unions Challenge Reductions

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been severely cut, with recommendations for substantial departments to be closed.

The hardest-hit universities have resolved to fight the cuts by, among other means, urging their members of Parliament to try to change the UGC's mind via political pressure. Salford University—the worst hit, with a cash cut of 44 per cent—has taken an original approach. Its governing council has launched a campaign to try to "reconstruct" the university with the needs of industry uppermost in his mind.

The UGC has also come in for some criticism from those in charge of planning Britain's research. The heads of the Research Councils—a separate system akin to the National Science Foundation—think that the UGC has not suggested enough pruning of departments. They argue that there will not be enough money around to maintain facilities in all the departments the UGC wants to keep. So even good departments will be threatened by piecemeal cuts, the Council chiefs argue. If departments deteriorate, they fear, then academics may not be able to formulate worthwhile plans for research, even if Council funds were available to support their projects.

The national organization of heads of UK universities, the Committee of Vice Chancellors and Principals of UK Universities (CVCP), is most concerned about the job losses that the costs will make necessary. The UGC has predicted that 3000 academics will have to lose their jobs by 1985, and that this rate of decrease cannot be accommodated by the easy attrition route. Apart from being distasteful in principle, sackings could be extremely expensive for universities, for the vast majority of British academics have full tenure. One senior academic estimated recently that $450 million would be required in compensation for job losses. So far, the UGC has allocated $36 million for the purpose. The Association of University Teachers (AUT), the academics' union, has resolved to fight redundancies, and has set up a fighting fund for the purpose.

The AUT and the CVCP agree on the more general issue that the cuts will seriously damage the university system as a whole; they claim that the contraction is being imposed more quickly than the system can cope with. In spite of representations from both organizations, the government seems unlikely to change the scale of the cuts.

Commentators outside the universities feel that such a drastic cut to the university system needs more public scrutiny and debate than it has so far received. The UGC is not required to justify its actions to anyone, and so far it has been reluctant to explain the reasons for its decisions. In July it answered questions from the House of Commons Select Committee on Education Science and Arts. Thanks to a government majority on the committee, it obtained permission to be examined *in private,* an unprecedented step for a Select Committee, which regularly holds public meetings. There's one consolation, however. The Select Committee did finally agree to make public information concerning the criteria that the UGC employed in making the cuts. In a nation where freedom of public information is entirely at the discretion of the government, that's regarded as very generous.—Ros Herman

(The author is Science News Editor of the British weekly *New Scientist*.)

NSF Grants for Handicapped

The National Science Foundation has awarded a total of $429,000 to nine institutions "to expand the participation of handicapped persons in scientific careers."

One of the projects, at the University of Georgia, Athens, "will teach high school and college biology instructors how to construct and test raised tactile diagrams in order to increase the accessibility of biology courses to visually handicapped students."

The other recipients are: Lawrence Hall of Science, Berkeley; Southern Illinois University, Carbondale; Ball State University, Indiana; University of Iowa; University of Louisville; MIT; St. Mary's Junior College, Minneapolis, and Columbia Education Center, Portland, Oregon.

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In Quotes: A Skeptical Eye on DOE's Labs

Arthur M. Bueche, GE Senior Vice President for Corporate Technology, was a Reagan science adviser during the campaign and transition, and though he declined an invitation to become White House science adviser, still figures as an elder statesman of science in the Administration. The following is from testimony he gave July 14 to the House Committee on Science and Technology concerning the thorny issue of what to do about the costly network of aging, mission-accomplished labs run by the Department of Energy:

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...while the DOE laboratories were growing and diversifying, the buying power of DOE's total budget for the conduct of R&D was shrinking. Between 1978 and 1981, the constant dollar value of the DOE budget for conduct of energy and general sciences R&D dropped by 12 per cent.

The largest single decline in the real dollar R&D budget of DOE was between 1980 and 1981. The total real budget dropped by 10 per cent, but the non-weapons staff of the 12 labs fell by only 1 per cent.

...we are faced with a significantly larger reduction in the DOE budget for 1982. If past trends continue, a much smaller share of a much smaller resource will remain for performance of R&D in the universities and industry. Is that bad? In my view, it is.

With the anticipated reductions, even the DOE Laboratories must be cut back. As reductions are made, the inherent difficulty in setting priorities on the basis of technical and economic feasibility will become even more of a problem to the overall DOE problem. At the same time, the more severe cutbacks required for work in the universities will result in even greater shortages of the bright young people needed to provide the ideas for tomorrow.

This is not meant to cast aspersions on the many fine people engaged in the energy R&D of the National Laboratories. However, it is only human nature that incentives within such institutions will tend toward the maintenance and healthy growth of their own programs, organizations and employment. There simply is no natural incentive for constant purging of unpromising efforts and transfer of know-how to commercial use as quickly and efficiently as possible.

DuPont Boosts Bio Spending

A major expansion of life-sciences research has been announced by the DuPont Company, which says it already puts $120 million of its current $570-million-a-year research bundle into bio-related research.

To expand that work, DuPont says it will build an $85-million research complex at its Experimental Station near Wilmington, Del. The facility, due for completion in December 1983, will include a new 250,000-square-foot facility for health-sciences research and a 100,000-square-foot expansion of the existing plant-sciences laboratory. DuPont recently gave Harvard Medical School $6 million for molecular genetics research.

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